



SLOVAK INSTITUTE OF METROLOGY

Notified body 1781, Karloveská 63, 842 55 Bratislava



Reg. No. 101/P-035

ES CERTIFIKÁT TYPU

EC – Type-examination certificate

Číslo dokumentu: **SK 08-MI001-SMU002** Revision 3
Document number: Revízia 3 nahrádza certifikát zo dňa 30 mája 2011
Revision 3 replaces the certificate issued by May 30, 2011

V súlade: nariadením vlády Slovenskej republiky č. 294/2005 Z. z. o meradlách, ktorým
In accordance with: sa preberá smernica Európskeho parlamentu a rady 2004/22/ES z 31. marca 2004 o meradlách
Government Ordinance of the Slovak Republic No. 294/2005 Coll., on measuring instruments, which implemented the Directive 2004/22/EC of the European Parliament and Council of the March 31, 2004 on measuring instruments

Žiadateľ/Výrobca: **Apator Powogaz S.A.**
Issued to (Manufacturer): **ul. Klemensa Janickiego 23/25, 60 – 542 Poznań, Poľská republika**

Druh meradla: **Vodomer / Skrutkový vodomer**
Type of instrument: **Water meter / Woltman water meter**

Označenie typu: **MWN (WPH-01)**
Type designation:

Základné požiadavky: príloha č. 1 a príloha MI-001 k nariadeniu vlády SR č. 294/2005 Z. z.
Essential requirements: **Annex No. 1 and Annex MI-001 to Government Ordinance of SR No. 294/2005 Coll.**

Platnosť do: **15. júla 2018**
Valid until: **July 15, 2018**

Notifikovaná osoba: **1781**
Notified body:

Dátum vydania: **8. decembra 2011**
Date of issue: **December 8, 2011**

Základné charakteristiky, popis meradla a podmienky schválenia sú uvedené v prílohe, ktorá je súčasťou tohto certifikátu. Certifikát vrátane prílohy má spolu 9 strán.

Essential characteristics, instrument description and approval conditions are set out in the appendix hereto, which forms the part of the certificate. The certificate including the appendix contains 9 pages.



Anna Nemečková
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osoba oprávnená konať v mene notifikovanej osoby č. 1781
Notified body No.1781

Poznámka: ES certifikát typu je bez pečiatky a podpisu neplatný. Tento ES certifikát typu môže byť rozmnožovaný len celý a nezmenený. Rozmnožovať jeho časti je možné len s písomným súhlasom Slovenského metrologického ústavu.

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1 Instructions and standards used within assessment

1.1 Generally binding instructions

Meter type was examined in terms of request for given type provisions Government Ordinance of the Slovak Republic No. 294/2005 Coll. (next Government Ordinance), on measuring instruments, which implemented the Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments.

Requirements are listed in No. 1 and Annex MI-001 to Government Ordinance of SR No. 294/2005 Coll.

1.2 Harmonised standards and normative documents used

- OIML R 49-1:2006 Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements
- OIML R 49-2:2004 Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
- STN EN 14154-1:2005+A1 Water meters - Part 1: General requirements
- STN EN 14154-2:2005+A1 Water meters - Part 2: Installation and conditions of use
- STN EN 14154-3:2005+A1 Water meters - Part 3: Test methods and equipment

1.3 Other instructions used:

- OIML R 49-2:2006 Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
- OIML R 49-3:2006 Water meters intended for the metering of cold potable water and hot water. Part 3: Test report format
- STN 25 7821 Water meters intended for the metering of cold and hot water and flow members of heat meters, Installation and conditions of use

2 Type marking

Woltman water meter - MWN (for type marking out of Poland is used **WPH-01**)

Meter is made in following subgroups:

Type of meter	Temperature class	Class	Nominal Diameter
MWN	T30, T50	M1 ¹⁾ B ²⁾ E1 ¹⁾	DN40, DN50, DN65, DN80, DN100, DN125, DN150, DN200, DN250, DN300

3 Description of measuring instrument

Meter name: Woltman horizontal water meter

Type marking: MWN, (WPH-01)

Description of operating principle instrument design:

The industrial horizontal meter is intended for metering of delivered water quantity. The Woltman meter (Picture No. 1) operates on the principle of a water speed sensor by impeller wheel. The operating speed of the wheel is proportionate to the speed of overflowing water. The operating speed is proportionate to water delivered quantity. The Water meter is dedicated to measure the flow and the delivered cold water quantity.

¹ according to Government Ordinance of the Slovak Republic, Annex No. 1

² according to STN EN 14154-3:2005+A1 and OIML R 49-2:2004



Water meter is:

- Woltman horizontal, dry water meter,
- with internal float regulation,
- with removable measuring insert in covered casing,
- measures in horizontal and vertical position.



Picture No.1 Woltman water meter MWN

3.1 Description of subgroups

Marking: MWN, MWN-NK, MWN-NKP, MWN-NO, MWN-NOP, MWN-NKOP, MWN-G (only for DN50), MWN-GH (only for DN50), (WPH-01, WPH-N-01)

DN: DN40, DN50, DN65, DN80, DN100, DN125, DN150, DN200, DN250, DN300

The Water meter can be equipped by following output impulses:

- MWN - basic type with mechanical counter
- MWN-NK - mechanical counter with contact impulse transducer
- MWN-NKO - mechanical counter with contact and optical impulse transducer
- MWN-NKP - advance prepared counter for contact transducer
- MWN-NO - mechanical counter with optical impulse transducer
- MWN-NOP - advance prepared counter to optical impulse transducer
- MWN-NKOP - counter for contact and optical impulse transducer prepared in advance
- MWN-G - threaded coupling
- MWN-GH - with hydrant stand pipe
- WPH-01 - basic type with mechanical counter
- WPH-N-01- mechanical counter with contact and/or optical impulse transducer or mechanical counter prepared in advance with contact and/or optical impulse transducer

3.2 Measuring insert

The measuring insert consists of the measuring mechanism, mechanism's flanged top cover and counter. The measuring insert is attached to the body by screws. The tightness of the measuring insert is secured in the body by 2 O-rings, while one O-ring secures the out side tightness (measuring insert and screws). The 2-nd O-ring secures the tightness of the insert situated in the body (inlet and outlet without DN125,150,200,250,300). The position of the regulation blade is adjustable via different positions in relation to the water flow.

3.3 Indicating device

The indicating device is a combined number rollers and pointers counter. It consists of 6 rollers for m³ and 3 or 2 scale indicators with pointers for the decimals of m³. Counter capacity is 999 999 m³ or 9 999 999 m³ and resolution of the reading is 0,5; 5 or 50 dm³.

The counter can be equipped by the contact or optical impulse transducer. The mechanical counter is equipped by metal cover, the contact or optical impulse transducer can be equipped as well.

3.4 Principle of operation

The core part of the water meter is the screw gear laying vertically on the axle of pipe axes. The screw gear is pressed by flash of liquid and turns into the rotation. The rotating movement of the screw gear is transferred through the magnetic clutch onto the mechanical counter.

3.5 Technical documentation

A number of drawing of technical documentation are listed in the following table:

7250-00000	7108-000000	7307-000000	7345-000000	7380-000000	7798-000000
5000-210000	5003-250000	5000-640000/114	5000-660000	5000-680000	5003-890000
7255-000000	7200-000000	7308-000000	7347-000000	7385-000000	7190-000000
5000-240000	5000-230000	5003-640000	5000-660000/114	5000-880000	6000-260000
7257-000000	7205-000000	7320-00000	7348-000000	7387-000000	7195-000000
5000-240000-114	5000-260000	5000-620000	5003-660000	5000-880000/115	6000-780000
7258-000000	7207-000000	7325-00000	7360-000000	7388-000000	7197-000000
5003-240000	5000-260000/114	5000-650000	5000-670000	5003-880000	6000-780000/115
7100-000000	7208-000000	7327-000000	7365-000000	7790-000000	7198-000000
5000-220000	5003-260000	5000-650000/114	5000-870000	5000-690000	5003-900000
7150-000000	7300-000000	7328-000000	7367-000000	7795-000000	
5000-250000	5000-610000	5003-650000	5000-870000	5000-890000	
7107-000000	7305-000000	7340-000000	7368-000000	7797-000000	
5000-250000/114	5000-640000	5000-630000	5003-870000	5000-890000/115	

All drawings, schemes and technical documentation used during the conformity assessment are saved in document No. NO-062/08 and NO-128/11.



4 Basic technical characteristics

Type marking		MWN40	MWN50 + MWN50-G MWN50-GH	MWN65	MWN80
Nominal diameter DN	mm	40	50	65	80
Indicating range	m ³	10 ⁶			
Resolution of the reading	m ³	0,0005			
Maximum admissible pressure	-	MAP16			
Working pressure range	bar	from 0,3 to 16			
Pressure loss	-	ΔP10		ΔP16	ΔP10
Temperature class	-	T30, T50			
Flow profile sensitivity classes	-	U0, D0			
Position	-	H, V			
Climatic and mechanical environments	-	closed spaces /from 5°C to 55°C/mech. class M1			
Electromagnetic environments	-	E1			
Contact impulse transducer NK	dm ³ /imp	2,5; 5; 10; 25; 100; 250; 500; 1000			
Optical impulse transducer NO	dm ³ /imp	1			

Type marking		MWN100	MWN125	MWN150	MWN200
Nominal diameter DN	mm	100	125	150	200
Indicating range	m ³	10 ⁶		10 ⁷	
Resolution of the reading	m ³	0,0005		0,005	
Maximum admissible pressure	-	MAP16			
Working pressure range	bar	from 0,3 to 16			
Pressure loss	-	ΔP10			
Temperature class	-	T30, T50			
Flow profile sensitivity classes	-	U0, D0			
Position	-	H, V			
Climatic and mechanical environments	-	closed spaces /from 5°C to 55°C/mech. class M1			
Electromagnetic environments	-	E1			
Contact impulse transducer NK	dm ³ /imp	2,5; 5; 10; 25; 100; 250; 500; 1000		250; 500; 1000; 2500; 5000; 10000	
Optical impulse transducer NO	dm ³ /imp	1		10	

Type marking		MWN250	MWN300
Nominal diameter DN	mm	250	300
Indicating range	m ³	10 ⁷	
Resolution of the reading	m ³	0,005	0,05
Maximum admissible pressure	-	MAP16	
Working pressure range	bar	from 0,3 to 16	
Pressure loss	-	ΔP10	
Temperature class	-	T30, T50	
Flow profile sensitivity classes	-	U0, D0	
Position	-	H, V	
Climatic and mechanical environments	-	closed space /from 5°C to 55°C/mech. class M1	
Electromagnetic environments	-	E1	
Contact impulse transducer NK	dm ³ /imp	250; 500; 1000; 2500; 5000; 10000	
Optical impulse transducer NO	dm ³ /imp	10	105,2632

4.1 Additional technical characteristics

IP Code	IP 66, IP 68
Weight	from 5,5 kg to 103,1 kg

5 Basic metrological characteristics

The maximum permissible error (accurate class):

$$\pm 5 \% (Q_1 \leq Q < Q_2)$$

$$\pm 2 \% (Q_2 \leq Q \leq Q_4) \text{ for water temperature (from } 0,1 \text{ to } 30) \text{ } ^\circ\text{C}$$

$$\pm 3 \% (Q_2 \leq Q \leq Q_4) \text{ for water temperature greater than } 30 \text{ } ^\circ\text{C}$$

Diameter	DN	mm	40		50		65		80		100	
Minimum flowrate	Q_1	m ³ /h	0,3968	0,25	0,4	0,3968	0,504	0,5	0,625	0,63	0,8	0,8
Transitional flowrate	Q_2	m ³ /h	0,64	0,4	0,64	0,64	0,806	0,8	1	1	1,28	1,28
Permanent flowrate	Q_3	m ³ /h	25	25	40	25	63	40	100	63	160	100
Overload flowrate	Q_4	m ³ /h	31,25	31,25	50	31,25	78,75	50	125	78,75	200	125
Measuring range R	Q_3/Q_1	-	63	100	100	63	125	80	160	100	200	125
Ratio	Q_2/Q_1	-	1,6									

Diameter	DN	mm	125	150		200	250	300	
Minimum flowrate	Q_1	m ³ /h	1,563	2	2	5,04	10	12,8	16
Transitional flowrate	Q_2	m ³ /h	2,5	3,2	3,2	8,064	16	20,48	25,6
Permanent flowrate	Q_3	m ³ /h	250	400	250	630	1000	1600	1600
Overload flowrate	Q_4	m ³ /h	312,5	500	312,5	787,5	1250	2000	2000
Measuring range R	Q_3/Q_1	-	160	200	125	125	100	125	100
Ratio	Q_2/Q_1	-	1,6						

6 Results of conformity assessment

The results of tests, assessments and evaluations given in the evaluation report No. 9328/230/142/11 dated 20 May, 2011 give sufficient evidence that the technical design of the measuring instrument – Woltman water meter type MWN is in compliance with the technical requirements of the Slovak Republic Governmental Ordinance No. 294/2005 Coll. On measuring instruments, Annex No. 1 and MI-001, and the EN 14154-1:2005+A1 and OIML R 49-1:2006 standards.

7 Conditions of conformity assessment of measuring instruments produced with type approval

Woltman meters put onto the market in line with the procedure of conformity assessment according to the D or F Annexes of the Governmental ordinance should be in compliance with the technical description by the item 3 of this report and at test should be in compliance with the requirements determined in OIML R 49-1:2006.



Metrological test is performed by a testing equipment which should be in compliance with the requirements determined in STN EN 14154-3:2005+A1 and water at temperature $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ in following point of flowrate:

- a) Minimum flowrate $Q_1 \leq Q \leq 1,1Q_1$
- b) Transitional flowrate $Q_2 \leq Q \leq 1,1Q_2$
- c) Permanent flowrate $0,9Q_3 \leq Q \leq Q_3$

A metrological test may only be performed by a producer, or a notified body respectively in line with the conformity assessment procedure according to the D or F Annexes of the Governmental ordinance respectively.

8 Data placed on the measuring instrument

On the shroud, the dial of the indicating device or on an identification plate of every water meter or in the product documentation minimum the following data should be marked:

- a) producers name or his production mark
- b) type of the Woltman meter
- c) measuring unit m^3
- d) numerical value of Q_3 and ratio Q_3/Q_1
- e) ratio Q_2/Q_1
- f) production number and the year of production
- g) number of EC certificate type and conformity mark
- h) the highest admissible pressure if it differs from 1 MPa
- i) flow direction
- j) class of pressure loss if it differs from Δp_{63}
- k) class of climatic and mechanical environment
- l) flow profile sensitivity classes
- m) class of electromagnetic environment
- n) output signal of impulse transducer
- o) the temperature class where it differs from T30

9 Measures asked for providing measuring instrument integrity

9.1 Identification

Woltman meter should be in compliance with the description provided on the item 3 of this Annex and should be in compliance with the marking specified by the item 7 of this Annex. The number given to the EC certificate is put at each piece of the measuring instrument.

Emplacement of the conformity mark is followed by § 7 of the Governmental ordinance.

9.2 Sealing of the measuring instrument

The Woltman water meter shall be before the conformity assessment according to the D or F Annexes sealed by following sealing marks:

Connection of counter shroud and water meter body shall be sealed by seal used for security measures (leaden seal) (Picture No. 2)





Picture No.2 Emplacement of the seal for security measures

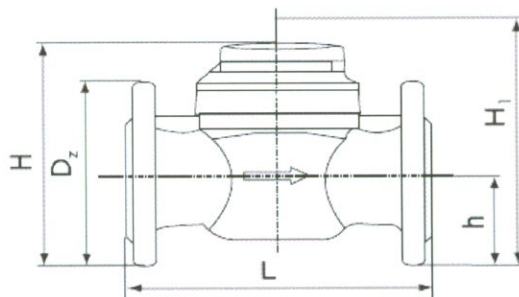
10 Requirements for installation, especially conditions of usage

10.1 Installation data

Nominal diameter - DN	40	50	65	80	100
Construction length [mm] - L	200	200	200	225/200	250
Flange diameter [mm] - D_z	150	165	185	200	220
Weight [kg]	7,9	9,9	10,6	13,3	15,6
Height [mm] - H	177	187	197	219	229
Distance axle from edge [mm] - h	65	72	83	95	105
Space height for remove insert - H_1	277	287	297	339	349

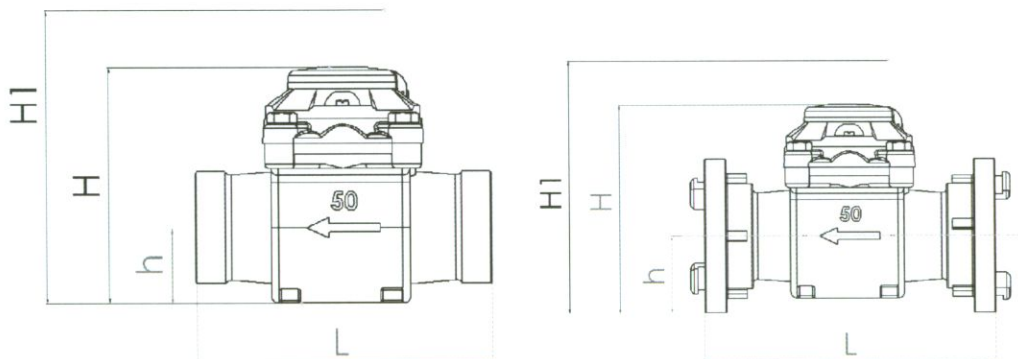
Nominal diameter - DN	125	150	200	250	300
Construction length [mm] - L	250	300	350	450	500
Flange diameter [mm] - D_z	250	285	340	400	460
Weight [kg]	18,1	40,1	51,1	75,1	103,1
Height [mm] - H	257	357	382	427	497
Distance axle from edge [mm] - h	120	135	160	193	230
Space height for remove insert - H_1	377	582	607	652	722





Picture No.3 Installation dimensions

Nominal diameter - DN	50-G	50-GH
Construction length [mm] - L	200	240
G	2 1/2	hydrant stand pipe
Weight [kg]	5,5	6,6
Height [mm] - H	160	170
Distance axle from edge [mm] - h	50	65
Space height for remove insert - H ₁	260	270



Picture No.4 Installation dimensions - MWN50-G/GH

10.2 Installation requirements

The Woltman water meter is introduced into the operation by a worker having a certificate for this activity performance. The Woltman meter is possible to be put into use after a construction in line with this report and in line with a producer instruction by "Instruction of installation and conditions of use of flanged water meters". A measuring instrument should be installed in direction of water flow arrow marked on the meter body.

10.3 Conditions of use

Within using the measuring instrument it is needed to be managed by recommendations of a producer by "Instruction of installation and conditions of use of flanged water meters".



Assessment done by: Ing. Miroslava Benková

